Idaho Department of Health and Welfare

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Tick-borne Relapsing Fever Fatality

In January 2000 an Eastern Washington neonate died of complications associated with an overwhelming spirochetemia, due to *Borrelia hermsii*, acquired in utero. The infant was carried to near-term and lived for approximately 1 week following birth. The infection was believed to have been acquired during the 5th month of pregnancy. At that time the mother had several undiagnosed febrile episodes after visiting a cabin in Northern Idaho. This was the first case of fatal neonatal borreliosis recorded in the U.S. since 1969. An increase in physician awareness is required in high-risk geographic locations, such as Northern Idaho, particularly in light of such a serious outcome. Relapsing fever is reportable in Idaho.

Tick-borne relapsing fever (TBRF), as the name implies, classically presents as a high fever that relapses, with drenching sweats, chills, headaches, myalgias, arthralgias, abdominal pain, malaise, and rash in up to 50% of those affected. Onset of illness typically occurs within one week of infection. An untreated fever may last for 3-6 days and recur after an afebrile period of approximately 8 days. Usually 3-5 relapses occur in the absence of treatment, with severity of illness declining with each relapse. Up to 10 relapses have been recorded. The organism attempts to avoid immune surveillance by rapid antigenic mutation leading to the recurring febrile episodes. Fatality occurs in 10% of untreated patients, and spontaneous abortion and transplacental transmission have been described. Tetracycline or erythromycin are the drugs of choice. The Jarisch-Herxheimer reaction has been recorded in up to 1/3 of treated patients.

Rustic cabins in Idaho, California, Colorado, and the rim of the Grand Canyon have all been associated with TBRF infections in the recent past. Idaho reported 36 cases between 1980-1999, primarily from the Panhandle region. Reports of illness peak in the spring and summer months.

The soft ticks responsible for disseminating this spirochete are the *Ornithodoros* species. They feed on squirrels, mice, chipmunks, rabbits, hares, and humans. Larva, nymphs, and adults are all infectious. Rodents carry and drop the soft ticks within structures, such as cabins. The ticks then seek out blood meals from human inhabitants. The responsible tick feeds at night, obtaining a blood meal within 15-45 minutes. Most bites go unrecognized, as the soft tick does not attach to the host for days at a time like the more recognizable hard tick. Soft ticks can survive up to 10 years, with infrequent blood meals every year or two, making certain cabins 'hot spots' for infection year after year. Due to the persistent nature of the offending ticks within structures, thorough environmental assessments accompany any disease investigation.

INSIDE:

Rustic cabins appear to pose the highest risk for infection. Prevention efforts should focus on the elimination of rodent access to structures and the use of an appropriate insecticide to exterminate existing ticks. Tick-borne relapsing fever should be considered with any recurring febrile illness.

Toxic Shock Syndrome Increase: Idaho

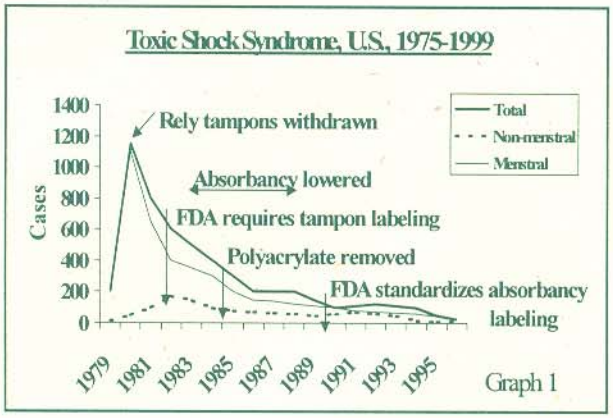
The term toxic shock syndrome (TSS) was first coined in 1978 and is categorized as menstral or non-menstral. Nationwide 76% of reported cases are menstral TSS. The recognized agents responsible for TSS are *Staphlococcus aureus* and *Streptococcus pyogenes*. The syndrome includes a high fever, vomiting, profuse watery diarrhea, myalgia, and hypotension which may lead to shock in severe cases. A sunburn-like rash is seen in a majority of cases, especially on the palms of the hands and/or soles of the feet. In 1980-81 an epidemiologic study revealed a strong association between TSS and the use of tampons with super absorbency and containing the chemical polyacrylate. Since this discovery, tampon manufacturers reduced the absorbency by almost half and removed the polyacrylate.

Tampons sold today are exclusively cotton and/or rayon. Nationally, TSS cases have decreased dramatically since the early 1980's (Graph 1).

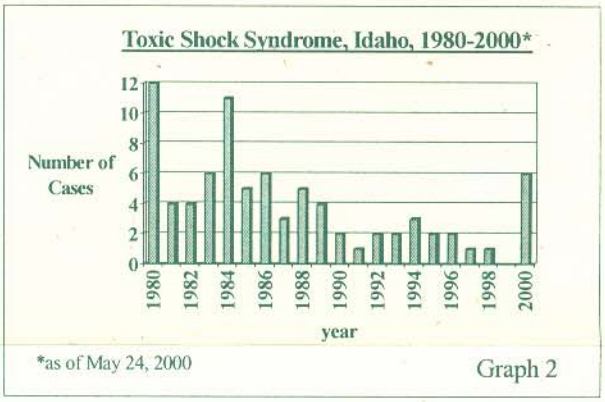
Since 1980, the downward trend seen in Idaho TSS cases mimicked national trends. However, beginning in January 2000, an unexpected increase in TSS reports was seen by the State Health Department (Graph 2). To date, 5 cases of menstral and 1 case of non-menstral TSS have been reported in 2000. Cases are distributed throughout the state and do not appear to be linked to any particular tampon brand. Several cases reported prolonged tampon usage.

To avoid TSS women are advised to:

- Change tampons frequently–every 4-8 hours. Overnight use for up to 8 hours is OK;
- Avoid using tampons that are more absorbent than needed; and
- Alternate tampon and sanitary napkin use.



Graph 1



*as of May 24, 2000

Graph 2

Hepatitis C in Idaho: Who and How to Test

Hepatitis C virus (HCV) is the most common chronic bloodborne infection in the United States. Since 1989 the annual number of new infections has declined by greater than 80%, but it is estimated that 3.9 million (1.8%) Americans are now infected with HCV. This may mean that over 24,000 Idaho residents have hepatitis C infection. Most of these persons are probably not aware they have the virus.

Infected persons serve as a source of transmission to others and are at risk for chronic liver disease during the decades following initial infection. The Idaho Division of Health and district health departments are currently defining our role in the prevention, testing, education, counseling, and treatment of this disease. This is the first of several articles in the Bulletin that will discuss aspects of HCV.

Who should be tested?

Since HCV is known to be spread by the same routes as other bloodborne infections (sexually, intravenously, and mother-to-infant), most of the risk groups are similar to what is seen for hepatitis B and HIV. However, a few important differences are important to keep in mind. Note that blood transfusions before July 1992 played a very large role in hepatitis C transmission, and infected large numbers of people who are not in the "traditional" high-risk groups. In addition, those persons who used injectable drugs once or twice in the past may not think of themselves as previous drug users, and only close questioning might determine they are at risk.

Persons who should be tested routinely for HCV infection based on their risk for infection

- Persons who ever injected illegal drugs, including those who injected once or a few times many years ago and do not consider themselves as drug users.
- Persons with selected medical conditions, including persons who received clotting factor concentrates produced before 1987; persons who were ever on chronic (long-term) hemodialysis; and persons with persistently abnormal alanine aminotransferase levels.
- Prior recipients of transfusions or organ transplants, including persons who were notified that they received blood from a donor who later tested positive for HCV infection; persons who received a transfusion of blood or blood components before July 1992; and persons who received an organ transplant before July 1992.

Persons who should be tested routinely for HCV infection based on a recognized exposure.

- Healthcare, emergency medical, and public safety workers after needle sticks, sharps, or mucosal exposures to HCV-positive blood.
- Children born to HCV-positive women.

Testing for the virus

The only tests currently approved by the Food and Drug Administration for diagnosis of HCV infection are those that measure anti-HCV. These tests detect anti-HCV in ≥97% of infected patients, but do not distinguish between acute, chronic, or resolved infection. As with any screening test, positive predictive value of the enzyme immunoassay (EIA) for anti-HCV varies depending on the prevalence of infection in the population and is low in populations with an HCV infection prevalence of <10%. Supplemental testing with a more specific assay (such as recombinant strip immunoblot assay [RIBA™]) of a specimen with a positive EIA result prevents reporting of false-positive results, particularly in settings where asymptomatic persons are being tested. The Idaho State Laboratory performs the EIA, but does not do confirmatory testing at this time. All those with positive screening tests are given information that treatments and drug payment assistance are now available, since this may encourage them to follow up with a medical provider, but specific treatment advice is currently beyond the scope of our activities.

Hep C educational opportunities on the Web:

Continuing medical education (CME) credits are available through a new on-line course, "Hepatitis C: What Clinicians and other Health Professionals Need to Know", offered by the Center for Disease Control. Go to: **www.cdc.gov/hepatitis** and click on "C" for details.

E. coli in the News

Some important information regarding antibiotic usage and the increased risk for developing hemolytic uremic syndrome (HUS) was recently published in the "New England Journal of Medicine." The authors investigated the possibility that antibiotic usage in young E. coli O157:H7 patients might alter the risk for developing HUS. A prospective cohort study was carried out in children younger than 10 years of age. There was a relative risk of 14.3 (95% confidence interval, 2.9 to 70.7) for children receiving antibiotic therapy to develop HUS. The authors recommend against giving antibiotics to children who may be infected with E.

coli O157:H7 until the results of a stool culture indicate the pathogen responsible is one that is appropriately treated by an antibiotic.

For the complete article, "The Risk of the Hemolytic-Uremic Syndrome after Antibiotic Treatment of Escherichia coli O157:H7 Infections" by Craig S. Wong, Srdjan Jelacic, Rebecca L. Habeeb, Sandra L. Watkins, Phillip I. Tarr, go to the following website:

http://www.nejm.org/content/wong/1.asp

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